Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. **(Currently amended)** A circuit to control the capacitance of a variable capacitor in a strictly linear mode ~~through~~ a steady tuning voltage and to achieve a high Q-factor at the same time; comprising:

a set of individual small capacitors;

a set of capacitor switching stages, each stage comprising;

a switching device, allowing a steady ramp-up/ramp-down phase between the points of being fully switched on and fully switched off, and where said switching device is connected in series with one of said capacitors, to connect a multiple of said capacitors in parallel;

a circuit to control the switching operation of said switching device in a steady ramp-up/ramp-down manner between the points of being fully switched on and fully switched off, ~~provided to said switching device,~~ comprising:~~;~~

a translinear amplifiers to produce the ramp-up/ramp-down signal for each of said set of switching devices, where said translinear amplifier is implemented within said circuit to control the switching operation;

a circuit to individually provide the threshold ~~points~~ levels for each of said capacitor switching stages, building a measure for the input and the output reference levels for each of said translinear amplifiers within said capacitor switching stages;

a circuit to provide the output reference level for said translinear amplifiers; ; and

a circuit to provide a signal, dependent on the tuning voltage, dedicated for the voltage controlled capacitance change, to the inputs of all of said capacitor switching stages.

2. **(Currently amended)** The circuit of claim **1** wherein said switching device with steady ~~transition~~ ramp-up/ramp-down phase is a FET transistor.

3. **(Currently amended)** The circuit of claim **2** wherein said switching device with steady ~~transition~~ ramp-up/ramp-down phase is a P-~~MOS~~channel or N-~~MOS~~ channel junction FET.

4. **(Currently amended)** The circuit of claim **2** wherein said switching device with steady ~~transition~~ ramp-up/ramp-down phase is a ~~C~~PMOS or NMOS FET.

5. **(Currently amended)** The circuit of claim **1** wherein said circuit to individually provide said threshold ~~points~~ levels for each individual capacitor switching stage generates a set of reference values, one value for each capacitor switching stage.

6. **(Previously amended)** The circuit of claim 5 wherein said circuit to generate a set of reference values, one for each of said capacitor switching stages, is implemented as a chain of resistors.

7. **(Original)** The circuit of claim **1** wherein said translinear amplifier has a gain of 1, the typical gain of translinear amplifiers.

8. **(Currently amended)** The circuit of claim **1** wherein said translinear amplifier has a gain differing from 1, which gives one more degree of freedom to optimize the operating parameters by making the steepness of the switching device's gate control voltage versus tuning voltage adjustable through proper gain selection, thus making the ~~like~~ overlapping of capacitor switching operation independent of the selected distance of the switching points of adjacent capacitor stages.

9. **(Previously amended)** The circuit of claim **1** wherein said circuit to provide a signal, dependent on the tuning voltage, dedicated for the voltage controlled capacitance change, is a single signal connected to all of said capacitor switching stages.

10. **(Currently amended)** The circuit of claim **1** wherein the circuit to provide the output reference level for ~~the~~ said translinear amplifiers, is a single signal connected to all translinear amplifier reference outputs.

11. **(Original)** The circuit of claim **1** wherein said capacitors are discrete capacitor components.

12. **(Previously amended)** The circuit of claim **1** wherein said capacitors are manufactured on a planar carrier, separate from the circuit carrier.

13. **(Original)** The circuit of claim **1** wherein said capacitors are integrated on a semiconductor substrate, but on a separate substrate than said switching devices and amplifiers.

14. **(Original)** The circuit of claim **1** wherein said capacitors are integrated on a semiconductor substrate and on the same substrate as said switching devices and amplifiers.

15. **(Original)** The circuit of claim **1** wherein said capacitors are manufactured as a Metal-Oxide structure.

16. **(Original)** The circuit of claim **1** wherein said capacitors are manufactured as a junction capacitor.

17. **(Currently amended)** A circuit to control the capacitance of a variable capacitor in a strictly linear mode through a steady tuning voltage and to achieve a high Q-factor at the same time, by controlling a multiple of switching devices through steady control signals when said switching devices operate within their steady ramp-up/ramp-down area and by sharply cutting off the control signals, when said switching devices ~~is~~ operate outside ~~its~~ their steady ~~transition~~ ramp-up/ramp-down area; comprising:

a set of individual small capacitors;

a set of capacitor switching stages, each stage comprising:

a switching device allowing ~~a~~ said steady ramp-up/ramp-down phase between the points of being fully switched on and fully switched off, and where said switching device is connected in series with one of said capacitors, to connect a multiple of said capacitors in parallel;

a circuit to control the switching operation ~~in a ramp-up/ramp-down manner, provided to~~ of said switching device, ~~as long as said switching device operates in its steady transition area, i.e. within the points of being fully switched on and fully switched off~~comprising:;

a translinear amplifiers to produce ~~the~~ said steady ramp-up/ramp-down signal for said switching device, where said translinear amplifier is implemented within said circuit to control the switching operation;

a circuit to drive said switching device to a fully on status, when said switching device ~~is~~ operates outside said steady ~~transition~~ ramp-up/ramp-down area on ~~the~~ said switching device's lower resistance side, and implemented in combination with said translinear amplifier;

a circuit to drive said switching device to a fully off status, when said switching device is beyond said steady ~~transition~~ ramp-up/ramp-down area on ~~the~~ said switching device's higher resistance side, and implemented in combination with said translinear amplifier;

a circuit to individually provide the threshold ~~points~~ levels for each of said ~~individual~~ capacitor switching stages, building a measure for the input and the

output reference levels for each of said translinear amplifiers within said capacitor switching stages; and

a circuit to provide a signal, dependent on the tuning voltage, dedicated for the voltage controlled capacitance change, to all of said capacitor switching stages.

18. **(Currently amended)** The circuit of claim **17** wherein said circuit to drive said switching device to a fully-on status, when said switching device ~~is~~ operates outside its desired steady transition area on the lower resistance side is provided by additional circuit elements, working as a signal ~~limiting~~ cutoff function.

19. **(Currently amended)** The circuit of claim **17** wherein said a circuit to drive said switching device to a fully-off status, when said switching device ~~is~~ operates outside its desired steady transition area on the higher resistance side is provided by additional circuit elements, working as a signal ~~limiting~~ cutoff function.

20. **(Currently amended)** The circuit of claim **1817** wherein said signal ~~limiting~~ cutoff function to drive said switching device to a fully-on status, when said switching device ~~is~~ operates outside its desired steady ~~transition~~ ramp-up/ramp-down area on ~~the~~ said switching device's ~~lower~~ resistance side, ~~are~~ is implemented within ~~the~~ said translinear amplifier circuit.

21. **(Currently amended)** The circuit of claim **1917** wherein said signal ~~limiting~~ cutoff function to drive said switching device to a fully-off status, when said switching device ~~is~~ operates outside its desired steady ~~transition~~ ramp-up/ramp-down area on ~~the~~ said switching device's ~~higher~~ resistance side, ~~are~~ is implemented within ~~the~~ said translinear amplifier circuit.

22. **(Original)** The circuit of claim **17** wherein said translinear amplifier has a gain of 1, the typical gain of translinear amplifiers.

23. **(Currently amended)** The circuit of claim **17** wherein said translinear amplifier has a gain differing from 1, which gives one more degree of freedom to optimize operating parameters, like overlapping of capacitor switching operation and signal cut-off at the edges of ~~the~~ said steady ~~transition~~ ramp-up/ramp-down area.

24. **(Previously Cancelled)**

25. **(Previously Cancelled)**

26. **(Currently amended)** A circuit to control the capacitance of a variable capacitor in a strictly linear mode through a steady tuning voltage and to achieve a high Q-factor at the same time, by controlling a multiple of capacitor switching devices through steady control signals and ~~to~~ by compensateing the temperature deviation of ~~the~~ said capacitor switching devices; comprising:

a set of individual small capacitors;

a set of capacitor switching stages, each stage comprising:

a switching device allowing a steady ~~transition~~ ramp-up/ramp-down phase between the points of being fully switched on and fully switched off, and where said switching device is connected in series with one of said capacitors to connect a multiple of said capacitors in parallel;

a circuit to control the switching operation of said switching device, ~~including~~ a steady ~~transition~~ ramp-up/ramp-down ~~phase~~manner, comprising:~~;~~

a translinear amplifier to produce said control signal for said switching device, and implemented within said circuit to control the switching operation;

a circuit to compensate the temperature deviation of said switching device, and implemented within said circuit to control the switching operation;

a circuit to individually provide the threshold ~~points~~ levels for each of said capacitor switching stages, building a measure for the input and the output reference levels for each of said translinear amplifiers within said capacitor switching stages; and

a circuit to provide a signal, dependent on the tuning voltage, dedicated for the voltage controlled capacitance change, to all of said capacitor switching stages.

27. **(Previously amended)** The circuit of claim **26** wherein said circuit to compensate the temperature deviation of said switching device is provided by feeding a modified reference voltage to said translinear amplifier's output reference point, to mirror a temperature correcting signal into the control signal of said switching device.

28. **(Previously amended)** The circuit of claim **27** wherein said circuit to compensate the temperature deviation of said switching device, uses a device of the same type as said switching device itself, to produce an exact equivalent of said temperature deviation.

29. **(Previously Cancelled)**

30. **(Currently amended)** The circuit of claim **1** wherein said circuit to individually provide said threshold ~~points~~ levels for each of said capacitor switching stages, generates a set of reference values, one value for each capacitor switching stage, in a non-linear relation between said tuning voltage and said threshold ~~points~~levels.

31. **(Currently amended)** The circuit of claim **30** wherein said a circuit to individually provide the threshold ~~points~~levels, for each circuit to control the switching operation, in a non-linear relation between said tuning voltage and said threshold ~~points~~levels, is provided by specifically selecting the steps of a set of reference values in a way, to achieve said desired non-linear relation.

32. **(Previously amended)** The circuit of claim **31** wherein said circuit to generate said set of reference values, one for each of said circuit to control the switching operation, is implemented as a chain of resistors.

33. **(Currently amended)** A method to control the capacitance of a variable capacitor in a strictly linear mode through a tuning voltage and to achieve a high Q-factor at the same time; comprising:

providing a set of individual small capacitors, a set of capacitor switching stages, comprising: a switching device allowing a steady ramp-up/ramp-down phase between the points of being fully switched on and fully switched off, and where said switching device is connected in series with one of said capacitors, to connect a multiple of said capacitors in parallel, a circuit to control the switching operation of said switching device in a ramp-up/ramp-down manner between the points of being fully switched on and fully switched off~~, provided to said switching device,~~ and comprising a translinear amplifier ~~to produce said control signal for said ramp-up/ramp-down switching, operation~~, and a circuit to individually provide the threshold ~~points~~ levels for each of said capacitor switching stages, a circuit to provide a signal, dependent on the tuning voltage, dedicated for the voltage controlled capacitance change, to all of said capacitor switching stages;

providing said threshold ~~points~~ levels for each individual capacitor switching stage;

supplying said signal, dependent on the tuning voltage, dedicated for the voltage controlled capacitance change, to all of said capacitor switching stages;

amplifying, by means of ~~a~~ said translinear amplifier, the difference of said tuning voltage and said threshold ~~points~~ levels within each capacitor switching stage to produce the linear control signal for a ramp-up/ramp-down switching operation;

fully switching on one of said switching devices in order to completely switch one of said small capacitors in parallel to the already switched on capacitors, one after the other to linearly increase the total capacitance;

fully switching off one of said switching devices in order to completely disconnect one of said small capacitors from the other switched on capacitors, one after the other, to linearly decrease the total capacitance; and

ramping up or ramping down the switching operation of one of said switching devices to partially switch, with increasing/decreasing share, one of said small capacitors in parallel to the already switched on capacitors, one after the other.

34. **(Currently amended)** The method of claim **33** wherein linearly controlling the switching operation applies to a FET transistor as the switching device with steady ~~transition~~ ramp-up/ramp-down phase.

35. **(Currently amended)** The method of claim **34** wherein linearly controlling the switching operation applies to a P-~~MOS~~channel or N-~~MOS~~ channel junction FET as said switching device with steady ~~transition~~ ramp-up/ramp-down phase.

36. **(Currently amended)** The method of claim **34** wherein linearly controlling the switching operation applies to a P-channel or N-channel ~~C~~MOS FET as said switching device with steady ~~transition~~ ramp-up/ramp-down phase.

37. **(Currently amended)** The method of claim **33** wherein individually providing said threshold ~~points~~ levels for each individual capacitor switching stage generates a set of reference values, one value for each capacitor switching stage.

38. **(Previously amended)** The method of claim **37** wherein generating a set of reference values, one for each of said capacitor switching stages, is performed by a chain of resistors.

39. **(Original)** The method of claim **33** wherein continually switching on one of said small capacitors in parallel to the already switched on capacitors applies to discrete capacitor components.

40. **(Previously amended)** The method of claim **33** wherein continually switching on one of said small capacitors in parallel to the already switched on capacitors applies to capacitors manufactured on a planar carrier, separate from the circuit carrier.

41. **(Original)** The method of claim **33** wherein continually switching on one of said small capacitors in parallel to the already switched on capacitors applies to capacitors integrated on a semiconductor substrate.

42. **(Previously amended)** The method of claim **33** wherein supplying a tuning voltage, dedicated for the voltage controlled capacitance change, to all of said capacitor switching stages uses a single signal connected to all amplifier inputs.

43. **(Currently amended)** A method to control the capacitance of a variable capacitor in a strictly linear mode through a tuning voltage and to achieve a high Q-factor at the same time by sharply cutting off the control signal, when ~~said~~ a switching device ~~is~~ operates outside its steady ~~transition~~ ramp-up/ramp-down area; comprising:

providing a set of individual small capacitors, a set of capacitor switching stages, each comprising: a switching device allowing a steady ramp-up/ramp-down phase between the points of being fully switched on and fully switched off, and where said switching device is connected in series with one of said capacitors in parallel, a circuit to control the switching operation of said switching device in a ramp-up/ramp-down manner between the points of being fully switched on and fully switched off~~, provided to said switching device,~~ and comprising, in addition to a translinear amplifier, a circuit to overdrive said switching device to a fully-on status, when said switching device ~~is~~ operates outside its steady ~~transition~~ ramp-up/ramp-down area on ~~the~~ said switching device's lower resistance side~~,~~ as well as a circuit to overdrive said switching device to a fully-off status, when said switching device is beyond its steady ~~transition~~ ramp-up/ramp-down area on ~~the~~ said switching device's higher resistance side, ~~a translinear amplifier,~~ and a circuit to individually provide the threshold ~~points~~ levels for each of said capacitor switching stages, a circuit to provide a signal, dependent on the tuning voltage, dedicated for the voltage controlled capacitance change, to all of said capacitor switching stages;

providing said threshold ~~points~~ levels for each individual capacitor switching stages;

supplying said signal, dependent on the tuning voltage, dedicated for the voltage controlled capacitance change, to all of said capacitor switching stages;

amplifying, with ~~a~~ said translinear amplifier, the difference of said tuning voltage and said threshold ~~points~~ levels of each amplifier stage, to produce the linear control signal for a ramp-up/ramp-down switching operation;

steadily ramp-up/ramp-down switching on or off said switching device in order to partially switch, with increasing/decreasing share, said small capacitor in parallel to the already switched on capacitors, one after the other, to linearly increase or decrease the total capacitance;

linearly controlling the switching function for each of said switching device with steady ramp-up/ramp-down phase, when said switching device is in its steady ~~transition~~ ramp-up/ramp-down area;

driving said switching device to a fully on status, when said switching device ~~is~~ operates outside its steady ~~transition~~ ramp-up/ramp-down area on ~~the~~ said switching device's ~~lower~~ resistance side; and

driving said switching device to a fully off status, when said switching device is beyond its steady ~~transition~~ ramp-up/ramp-down area on ~~the~~ said switching device's ~~higher~~ resistance side.

44. **(Currently amended)** The method of claim **43** wherein driving said switching device to a fully-on status, when said switching device ~~is~~ operates outside its desired steady ~~transition~~ ramp-up/ramp-down area on ~~the~~ said switching device's ~~lower~~ resistance side uses additional circuit elements, working as a signal ~~limiting~~ cutoff function.

45. **(Currently amended)** The method of claim **43** wherein driving said switching device to a fully-off status, when said switching device ~~is~~ operates outside its steady ~~transition~~ ramp-up/ramp-down area on ~~the~~ said switching device's ~~higher~~ resistance side uses additional circuit elements, working as a signal ~~limiting~~ cutoff function.

46. **(Currently amended)** The method of claim **44** wherein said signal ~~limiting~~ cutoff operation to drive said switching device to a fully-on status, when said switching device ~~is~~ operates outside its steady ~~transition~~ ramp-up/ramp-down area on the ~~lower~~ resistance is implemented within ~~the~~ said translinear amplifier.

47. **(Currently amended)** A method to control the capacitance of a variable capacitor in a strictly linear mode through a tuning voltage and to achieve a high Q-factor at the same time and to compensate the temperature deviation of the capacitor switching device; comprising:

providing a set of individual small capacitors, a set of capacitor switching stages, each comprising: a switching device with steady ~~transition~~ ramp-up/ramp-down phase to continually switch on said capacitors in parallel, a circuit to control the switching operation of said switching device and comprising, a translinear amplifier ~~to produce said linear control for said switching function~~, a circuit to compensate the temperature deviation of said switching device, and a circuit to individually provide the threshold ~~points~~ levels for each individual capacitor switching stage, a circuit to provide a signal, dependent on the tuning voltage, dedicated for the voltage controlled capacitance change, to all of said capacitor switching stages;

providing said threshold ~~points~~ levels for each individual capacitor switching stage;

supplying said signal, dependent on the tuning voltage, dedicated for the voltage controlled capacitance change, to all of said capacitor switching stages;

amplifying, with ~~a~~ said translinear amplifier, the difference of said tuning voltage and said threshold ~~points~~ levels within each capacitor switching stage, to produce the linear control signal for a ramp-up/ramp-down switching operation;

continually switching on one of said switching devices with steady ~~transition~~ ramp-up/ramp-down phase in order to switch one of said small capacitors in parallel to the already switched on capacitors, one after the other;

linearly controlling the switching function for each of said switching devices with steady ~~transition~~ ramp-up/ramp-down phase; and

compensating the temperature deviation of said switching device.

48. **(Original)** The method of claim **47** wherein compensating the temperature deviation of said switching device is provided by feeding a modified reference voltage to said translinear amplifier's output reference point, to mirror a temperature correcting signal into the control signal of said switching device.

49. **(Original)** The method of claim **48** compensating the temperature deviation of said switching device, uses a device of the same type as said switching device itself, to produce an exact equivalent of said temperature deviation.

50. **(Previously Cancelled)**

51. **(Currently amended)** The method of claim **33** wherein individually providing said threshold ~~points~~ levels for each individual capacitor switching stage generates a set of reference values, one value for each capacitor switching stage in a non-linear relation between said tuning voltage and said threshold ~~points~~levels.

52. **(Currently amended)** The method of claim **51** wherein providing a non-linear relation between said tuning voltage and said threshold ~~points~~ levels is provided by specifically selecting the steps of said set of reference values in a way, to achieve said desired non-linear relation